

## David Lockwood Receives Lifetime Achievement Award



DAVID LOCKWOOD (right) receives the CSSTC Lifetime Achievement Award from PETER MASCHER.

**D**AVID J. LOCKWOOD, a member of the Luminescence and Display Division and an ECS Fellow, received the 2011 Lifetime Achievement Award of the Canadian Semiconductor Science and Technology Conference in August. He was presented with the award at the conference in Vancouver by the Award Committee Chair, Peter Mascher, who is a member of the ECS Dielectric Science and Technology Division. Dr. Lockwood was cited "in recognition of over 40 years of outstanding contributions to the generation and dissemination of knowledge related to materials science as revealed by optical spectroscopy." In accepting the award, Dr. Lockwood remarked that he strongly believed that this award, in being given to a National Research Council of Canada scientist, more properly recognized the substantial contributions of NRC staff to semiconductor research and development in Canada over the last 25 years. ■



**ECS** 221<sup>st</sup> ECS Meeting  
**Seattle, WA**  
 May 6-11, 2012

## Future Technical Meetings

### 2012 Fall Meeting

Oct. 7-12, PRIME 2012  
 Honolulu, HI

### 2013 Spring Meeting

May 12-17, Toronto, ON, Canada

### 2013 Fall Meeting

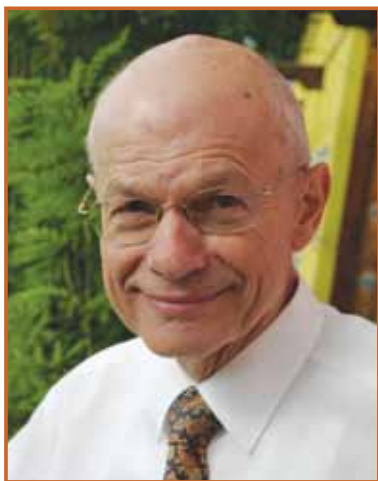
Oct. 27-Nov. 1, San Francisco, CA

### 2014 Spring Meeting

May 11-16, Orlando, FL

[www.electrochem.org](http://www.electrochem.org)

## In Memoriam



**Dieter Kolb**  
(1942-2011)

**DIETER KOLB** passed away on October 4, 2011, in Ulm, Germany. Born in Amberg/Oberpfalz on October 11, 1942, he studied physics at the Technical University of Munich, and continued in graduate research with Heinz Gerischer. Following a postdoctoral appointment at Bell Laboratories, he returned in 1971 as group leader in the laboratory of Prof. Gerischer, by then relocated to the Fritz-Haber-Institute in Berlin. In 1990 he moved to the University of Ulm as professor of physical chemistry and electrochemistry and Head of the Institute of Electrochemistry, a position he held until 2010. In 2011, he was appointed Founding Director of the Helmholtz Institute of Electrochemical Energy Storage.

Professor Kolb is recognized internationally for applying modern experimental techniques to electrochemical problems with the objective of elucidating molecular-level behavior at the immersed electrified solid-liquid interface. By combining information from single crystal electrodes of well-defined surface structure, along with classical electrochemistry and surface science techniques, he obtained unprecedented insights into the mechanism of elementary processes, especially the influence of surface structure on electrochemical reactions.

Questions about the microscopic structure of the metal/electrolyte-interface had already arisen in Berlin. It was recognized that new experimental techniques were needed to gain information at the atomic level. Kolb and his team presented revolutionary results on the reconstruction of gold surfaces in contact with aqueous electrolytes. His systematic

studies of Au(100) established the stability potential range of the reconstructed surface in contact with various electrolytes, and also led to the discovery of a potential-induced reconstruction phenomenon. The impact of this discovery had far-reaching consequences that led to the re-interpretation of many previously published results. Professor Kolb also made seminal contributions to understanding metal adsorption on foreign metal electrodes, i.e., the under-potential deposition phenomenon. He elucidated the adlayer structure, and investigated in detail the role of co-adsorbed anions on interfacial structure formation.

At the University of Ulm, Prof. Kolb perfected *in situ* scanning tunneling microscopy with atomic-scale resolution. He and his colleagues obtained spectacular images of nucleation at surface defects, and studied in detail the growth of pseudomorphic thin films. The quality of STM imaging reached new levels as rigorously detailed publications gave meticulous attention to experimental detail associated with preparation of well-defined clean metal surfaces. These experimental investigations were also exciting owing to their insightful interpretations, which served to attract theoreticians to develop better understanding of solvent structure near a charged wall, as well as the calculation of binding energies and reactivities. More recent results from his laboratory deal with ionic liquids, as well as the electrochemical metallization of organic surfaces where metal is deposited on top of self-assembled monolayers.

During his career, Prof. Kolb has thus investigated some of the most significant problems of the molecular structure of the electrified solid-liquid interface. His portfolio of over 300 publications provides a foundation for creation of interface structures by manipulation of atoms. Many by now stand as landmarks in the literature owing to their quality and originality. Dieter Kolb studied the literature in a voracious, old-school style that involved reading hundreds of proposals and publications each year, and remembering their content with the result that he could cite references at will. He brought this deep knowledge of the literature into technical discussions in ways that invariably added to the knowledge of all present, no matter how large the room.

For these accomplishments, Prof. Kolb has been recognized in many ways: Frumkin Memorial Medal, ISE (2011); ECS Olin-Palladium Award and Medal (2009); Fellow of ISE (2007); Foreign Member of the National Academy of Science of Argentina (2005); Welch Lecture, Robert A. Welch Foundation (2005); Faraday Medal, Royal Society of

Chemistry (2003); President of ISE (2003); Research Award, ECS Electrodeposition Division (2002); Walther-Nernst Gedenkmedaille, Deutsche Bunsengesellschaft (2002); ECS Fellow (2001); Luigi Galvani Medal, Italian Chemical Society (2000); ECS David C. Grahame Award (1997); ISE Pergamon Gold Medal (1991); and Haber Prize, Deutsche Bunsengesellschaft für Physikalische Chemie (1980).

Two remarkable individuals had a lasting influence on Prof. Kolb. In 1969 he married Franziska Meder. Her warm and engaging personality sparkled with energy and compassion. She was a wonderful companion who beautifully complimented his intense and scholarly manner. But it is the nature of life that the brightest lights sometimes do not last the night, but slip away too soon and too young. Her memory lives on through the Franziska Kolb Foundation, established in 1994, which sponsors an annual award in support of medical research on leukemia. After this devastating personal loss, Dieter Kolb fully concentrated on science and teaching, always referring to the members of his institute as his scientific family.

The other major influence was his mentor, Heinz Gerischer, a man of singular talents and sensitivities who was a co-worker of Karl Friedrich Bonhoeffer, who in turn worked with Walter Nernst and Wilhelm Ostwald. The long and close relationship between Professors Gerischer and Kolb was a source of deep personal inspiration for both men. In his memory, Prof. Kolb and his colleagues have held, every three years in Berlin, the "Gerischer Symposium" on fundamental topics of electrochemistry. As had Prof. Gerischer before him, Kolb served as co-editor of the series, *Advances in Electrochemistry and Electrochemical Engineering*.

Thus Dieter Kolb, who stands squarely in the line of classical traditions of physical chemistry and electrochemistry, became a leading exponent in transforming the field to modern electrochemical surface science, with its atomistic view of the solid-liquid interface and its change with an externally applied electric potential. For his inspirational leadership in this outstanding contribution, friends and colleagues hold Dieter Kolb in highest esteem. But even more, he is remembered as an exceptional individual with unique personal qualities of warmth, gentle humor, courtly grace, and honorable character. The whole electrochemical community will miss him greatly. ■

*This notice was contributed by Ludwig A. Kibler and Richard C. Alkire.*

## In Memoriam



**Richard P. Buck**  
(1929-2011)

**R**ICHARD P. BUCK died July 22, 2011 in Palo Alto, California, just a week short of his 82<sup>nd</sup> birthday. He died of cancer, which he fought off for a number of years. He was born in Los Angeles, California, graduated from the South Pasadena-San Marino High School (1946) and went on to receive his BS (1950) and MS (1951) in Pasadena, California from the California Institute of Technology. He moved on to the East Coast to receive his PhD from the Massachusetts Institute of Technology in 1954, where he worked with David N. Hume. Then he first worked as a research chemist in La Habra, California for California Research Corporation, where he carried out fundamental research on fuel cells and other electrochemical systems. While there, he attended postgraduate courses at the University of California Berkeley and later UC Los Angeles. He then held two additional industrial positions, first at Bell & Howell Research Center and then with Beckman Instrument Co., before he joined the ranks of academia in 1967 as an associate professor at the University of North Carolina (UNC) at Chapel Hill. He was a full professor in the Department of Chemistry at UNC from 1975 to 2001, when he retired.

He became a leading scientist in his field with over 400 publications and miscellaneous writings, documenting his broad interests in electroanalytical science as well as fundamental electrochemistry and additionally, characteristically for him, music history. His work dealt with such topics as transport of charge in pure ionic conductors,

transport of charge in mixed conductors, impedance, voltage step and steady state theory, experiments for thin layer and membrane systems, theory and tests of ion-selective electrode responses, design and practice of ion-selective electrodes and biosensors, transport across and electrical structure of immiscible liquid interfaces, spectroscopy of surfaces, and contributed to various analytical methods as well. In recognition of his contribution to electroanalytical chemistry he received the Charles N. Reilley Award of the Society for Electroanalytical Chemistry in 2001.

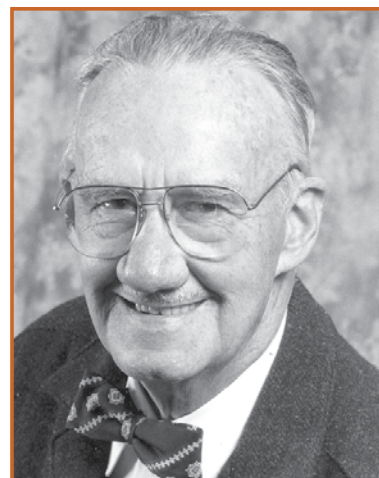
Professor Buck traveled extensively and he had particular fondness for culture and people of Eastern Europe. He collaborated with international chemists and developed a deep understanding of the history of various countries. For example, he became an Honorary Member of the Romanian Society of Analytical Chemistry, and he represented the U.S. at the signing of the National Science Foundation-Hungarian Academy of Sciences anniversary agreement. He was also very active in IUPAC, where among others contributions he served as the chair of the the commission on electroanalysis.

His involvement in promoting science and his work in learned societies was plentiful as well. He was the co-founder, vice chair, and later a chair of the Gordon Conference on Electrochemistry. He was a member of ECS, IEEE-EMBS, Society of Electroanalytical Chemistry, American Chemical Society, and the International Society of Electrochemistry. As a member of ECS he served as the Chair of the Sensor Division, organized numerous symposia, and taught short courses.

Dr. Buck was also an accomplished pianist and was interested in all kinds of music and in particular in opera. During his trips to Eastern Europe he was known to seek recordings and sheet music of local composers, some of them sufficiently obscure that even the native residents hadn't heard of them. He was a dedicated member of the Bohemian Club of San Francisco for 52 years, where he regularly performed on piano. His knowledge of music and its history were certainly just as extensive as his broad knowledge of science. For the Club he wrote a number of library notes on music and a comprehensive 750-page music history book.

Richard Buck is survived by his wife Mary Ann, three children, and one grandchild. ■

*This notice was contributed by Petr Vanýsek, past Secretary of the Society.*



**Wilson Greatbatch**  
(1919-2011)

**W**ILSON GREATBATCH, well known as the inventor of the first successful implantable cardiac pacemaker, passed away on September 27, 2011. He was 92 years old.

Mr. Greatbatch was born in Buffalo, NY and attended elementary and high school in the Buffalo suburb of West Seneca. He was married to Eleanor Wright Greatbatch in 1945. They had five children, four sons, and a daughter.

He joined the Navy in 1939 and served as a radioman/gunner on bombers flying off the aircraft carrier USS Monterey. After his military service, he attended Cornell University and graduated in 1950 with a BS in electrical engineering. He subsequently earned a master's degree in the same field from the State University of New York at Buffalo.

Mr. Greatbatch set up an electronics workshop in the barn behind their house, and, working with Buffalo physicians William Chardack and Andrew Gage, developed the first successful cardiac pacemaker, which was implanted at the Veterans' Hospital in Buffalo in 1960. He licensed his pacemaker patent to the Medtronic Corporation in 1961, and served as a consultant to that company for many years. Today close to 1,000,000 pacemakers are implanted yearly.

Greatbatch recognized that one of the fundamental limitations of pacemakers was the zinc/mercuric oxide battery system in use



at that time. In 1970, he was determined to find a better battery, and he began a search for a more reliable and longer-lasting battery system. He discovered the lithium/iodine-polyvinylpyridine battery, which had been developed by a Baltimore company called Catalyst Research Corporation. He licensed the technology, hired battery scientists working in thermal batteries at the Wurlitzer Corporation, and founded Wilson Greatbatch Limited (WGL). He joined ECS in the early 1970s in order to become more familiar with battery technology. He authored and presented papers at several ECS meetings.

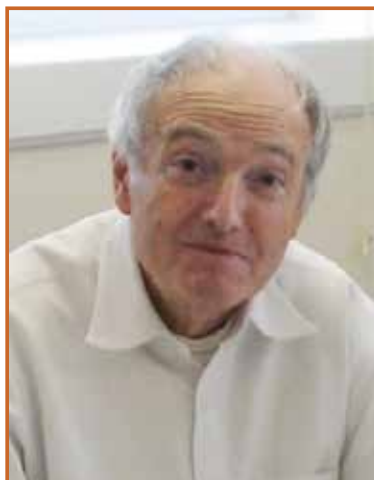
WGL began manufacturing the batteries, and before long the system was the most commonly-used pacemaker battery. WGL, now known simply as Greatbatch, grew into a multinational company that manufactures implantable batteries, commercial industrial lithium batteries, medical devices and components, and other high-reliability devices. The company currently has 3300 employees in several U.S. and foreign facilities.

Mr. Greatbatch left the company in 1985 to pursue other interests. He developed patents for working with the HIV virus, investigated alternative fuels, and even worked in cloning plants. He held 54 U.S. patents and over 300 international patents. At age 92, he was awaiting the issuance of his 55<sup>th</sup> patent when he passed away.

Mr. Greatbatch was predeceased by his wife Eleanor and his youngest son, Peter. His surviving family includes three sons, a daughter, twelve grandchildren, and eight great-grandchildren.

Mr. Greatbatch leaves a legacy that includes cardiac pacing, the treatment of choice for bradycardia, improved battery systems, other medical devices and components, and a successful company that bears his name. He will be long remembered in the fields of implantable devices and batteries. ■

*This notice was contributed by Curtis F. Holmes, retired Chief Technology Officer, Greatbatch.*



**Anthony B. LaConti**  
(1936-2011)

**A**NTHONY B. (“TONY”) LACONTI died on September 5, 2011. Dr. LaConti was Chief Executive Officer of Giner, Inc. and a long-time member of ECS and the American Chemical Society. He authored numerous publications in electrochemistry dealing with proton exchange membranes and their use in fuel cells and electrolyzers. Dr. LaConti was an inventor with 57 U.S. patents dealing with multiple aspects of electrochemistry ranging through gas generators, sensors, and fuel cells.

Dr. LaConti received his bachelor of arts degree in chemistry and mathematics from Suffolk University in 1958 and his master's and doctoral degrees in chemistry from Boston College in 1960 and 1965, respectively.

Dr. LaConti spent his early career in at General Electric rising to the position of Manager of Materials and Technology Development for their electrochemical energy conversion programs, where he was instrumental in the development of fuel cells for the Apollo and Gemini programs and electrolyzers using the then nascent technology of polymer electrolyte membranes. He also worked on extending the use of PEMs to chlor-alkali electrolysis, water purification, and artificial kidneys. He twice received (1974 and 1979) the Aerospace Instrument Department's Engineer of the Year award.

Dr. LaConti followed the GE electrochemical group when acquired by United Technologies where he was the Engineering Manager for Hamilton-Standard Electro-Chem Products. While there he continued his work in fuel cells

and electrolyzers and their application in aeronautic and sub-sea applications, receiving awards for business development (1985) and inventorship (1986).

Dr. LaConti joined Giner, Inc. in 1986 and subsequently applied his PEM expertise to sensors, capacitors, and direct methanol fuel cells while continuing his contributions to hydrogen fuel cells and water electrolyzers. In the process he co-authored numerous reports, papers, and chapters in electrochemical texts. It was under his leadership that Giner grew to be a leading research organization in electrochemical technologies.

LaConti was one of the founders of Giner Electrochemical Systems, LLC in which General Motors and Giner, Inc. joined forces to accelerate the development of automotive fuel cells. Though Giner, Inc. recently re-acquired General Motor's interest in GES, that collaboration continues through today.

Dr. LaConti was a long-time resident of Lynnfield, MA and is survived by his wife, Brenda, and his two daughters and son (Cara, Jennifer, and Christopher). ■



**James McBreen**  
(1938-2011)

**J**AMES MCBREEN passed away on August 19, 2011 after two years of failing health. Dr. McBreen was well known for this pioneering work on various aspects of electrochemical science and technology. He also leaves behind a wealth of scientists whom he mentored over the years. He made many notable contributions in the area of zinc batteries, irreversibility of manganese oxide electrodes in alkaline pH, he pioneered the use of *in situ* synchrotron X-ray absorption and diffraction tools for studying electrocatalysis and intercalation materials and synthesis of non-aqueous electrolytes based on the use of neutral Lewis acid

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*In Memoriam**(continued from previous page)*

anion complexing agents. He came to the United States after receiving his bachelor's degree in chemistry from University College Dublin, Ireland (1961), to join John Bockris's group in the Department of Chemistry at the University of Pennsylvania, from where he received his PhD in physical chemistry in 1965. He worked in Yardney Electric Corp. (1965-1968) and General Motors Research Laboratory (1968-1977). At both places he worked on fundamental and applied aspects of a variety of battery systems including zinc nickel oxide, primary and secondary zinc silver oxide, zinc manganese dioxide, zinc air, cadmium silver oxide, and seawater activated magnesium silver chloride batteries.

Dr. McBreen arrived at Brookhaven National Laboratory in 1977 where he started research on electrochemically regenerative hydrogen/halogen energy storage systems, water electrolyzers, zinc electrodes in alkaline and acidic electrolytes, solid polymer electrolyte fuel cells, and metal hydride batteries. His recent projects covered non-aqueous liquid and polymer electrolytes, electroactive polymers, electrodes for lithium-ion batteries, and electrocatalysts for fuel cells.

Along with William O'Grady, Dr. McBreen pioneered the application of *in situ* synchrotron X-ray techniques to the study of materials for batteries and fuel cells. This included *in situ* X-ray absorption spectroscopy (XAS) and X-ray diffraction (XRD) studies of metal hydrides, non-aqueous liquid and polymer electrolytes, lithium-ion battery electrode materials, carbon supported platinum and platinum alloy

fuel cell catalysts, nickel oxide electrodes, pyrolyzed metal macrocyclic electrocatalysts, zinc electrodes, zinc bromide electrolytes, poly(ethylene oxide)-salt complexes and electroactive polymers.

Dr. McBreen made very significant contributions to ECS, having served as Chair of the Honors and Awards Committee (1996-2000), ECS Secretary (1992-1996), Chair of the Battery Division (1994-1996), Chair of the Energy Technology Division (then a Group, 1982-1984), Chair of the Education Committee (1980-1982), and as a Divisional Editor for the *Journal of The Electrochemical Society* (1988-1990). He was also the recipient of numerous awards; most notably were the Battery Division Research Award (1974), Fellow of ECS (2001) and of the International Society of Electrochemistry (2005).

Dr. McBreen was an active member of his local community in the historic town of Bellport, NY, and in his church having served in various capacities in these local societies. He is survived by his wife Betty, his son Brian, and daughter Susan. He was an avid gardener, cook, and granddad at home and an eager traveler. He will be remembered for his warmth, integrity, and genuine love for his work. Jim McBreen was a wonderful mentor to many a young scientists who had the good fortune to have worked with him. ■

*This notice was contributed by Sanjeev Mukerjee, Northeastern University, Chair of the ECS New England Section.*

*memoriam*

**ROGER A. COVERT** (1929-2009), member since 1961, Corrosion Division.

**WADE H. JORDAN** (1932-1011), member since 1959, Battery Division.